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ABSTRACT

This paper identifies the major characteristics of the Pittsburgh Regional Library Center as it might look in the mid 1970's. It is a long-range look at what is technically and organizationally feasible, and is organized into five areas: (1) parameters around which the Center is to be designed, (2) characteristics of tools and systems now available or expected in the near future, (3) basic characteristics of the Center, (4) present state of development of the Center's characteristics and (5) major steps leading to implementation of this future Center outlined within a time frame. This paper seeks to develop the concept of a regional library center and what it can accomplish. (MF)

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THE REGIONAL LIBRARY CENTER IN THE MID 1970's

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL BY MICROFICHE ONLY HAS BEEN GRANTED BY

Thomas Minder

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

A Concept Paper

by

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University of Pittsburgh

Graduate School of Library and Information Sciences

1968

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CHAPTER I -- STUDY GUIDE AND PARAMETERS

INTRODUCTION

The Pittsburgh Regional Library Center has been established as a non-profit corporation. The members include the University of Pittsburgh, Carnegie-Mellon University, Duquesne University, Mount Mercy College, Point Park College, Robert Morris Junior College, and the Carnegie Library of Pittsburgh. Although these charter members are all located in the City of Pittsburgh, it is expected that the membership will eventually extend to institutions with libraries within a 200 mile radius of Pittsburgh. The purpose of the Center is to improve the overall efficiency and effectiveness of each member library, and the group as whole, primarily through cooperative efforts.

During the initial year of operation the Executive Director has been asked to develop a program for the Corporation. This document is the first working paper leading to that end.

The objective of this paper is to identify the major characteristics of the Center as it might look in the mid 1970's. It is a long-range look at what is technically and organizationally feasible. Money and personnel are assumed to be available.

The paper is organized into five areas:

1. The parameters around which the Center is to be designed are identified.
2. The characteristics of tools and systems now available or expected in the near future are summarized.
3. Basic characteristics of the Center are outlined.
4. The present state of development of the Center's characteristics is discussed.
5. The major steps leading to implementation of this future Center are outlined within a time frame.

Although this paper is addressed to the members of the Pittsburgh Regional Library Center, the comments and recommendations will apply to almost any cooperative library organization.

PARAMETERS AND ASSUMPTIONS

The words "publication" and "book" in this study are used in the generic sense and mean any form of permanently recorded information (e.g. a stone tablet, magnetic tape, movie film, printed page).

Man's need for information is identified usually in less well-defined, discrete terms. He shifts from one medium to another and combines media to fit his specific needs at the moment. His decision is based upon such factors as time, cost, personal habits and education, facilities available, and dependability of his sources.

The readers' service problems have been summed up succinctly by one engineering professor, "I want to be able to find appropriate information to solve my problem with a minimum of effort, time, and ambiguity. I really have no concern as to the source of that information, whether it be another person, an experiment, or the literature." This implies a system not only static with the material available on the shelf, identified in the catalog, and the staff waiting to serve the patrons, but also dynamic in presenting and manipulating permanently recorded information in a way that supports the user's whole information gathering and evaluation process. This dynamic role may mean a closer relationship of the library with the work of the classroom, curriculum committee, or community that the library serves. It may mean the design of catalogs, and circulation services beyond the walls of the library and within the laboratories and offices of the users.

On the other hand, the library has limited resources with which to aid the patron. Publications must be selected, acquired, processed, and serviced as time and money permit. Technical constraints such as space, the limits of tools, and the inherent characteristics of language circumscribe the library's efficiency and can be summarized as the library's second problem--the need to make services available at least cost. The solution to any library problem equates effective service to the patron with internal efficiency. The goal of system analysis and system design is to arrive at the optimum balance between the two factors.

The control of publications is fundamentally the records associated with these publications. In the library these records are grouped into files by function, such as the card catalog, bibliograpies, circulation file, and the outstanding order file, excluding the ungrouped records of various processing slips. Although this study occasionally will refer to specific records and files, emphasis will be on these records as a complete control system. The basic unit in this controlled system is called the bibliographic record. The data within any specific record may contain all or any part of data to be found in the present library records or files. The bibliographic record designed will be to include additional data as they are identified or created in future studies by the Center.

The Center has a radius of two hundred miles but its present membership is limited to the Pittsburgh area resulting in the Center's design in two parts. Locally, distance is relatively insignificant in determining system efficiency and effectiveness, but as the distance from Pittsburgh increases, a different set of standards must be used to determine efficiency and effectiveness. This first study considers only the local situation. A later paper will consider the effect of distance on the total design of the Center.

CHAPTER II -- LIBRARY TOOLS

Of the tools necessary for the development of an ideal system, some are being developed, others are available but have not been tested or used in an operating library environment. This chapter will describe the types of tools now available, and those probably available for our use when we need them. Not only must these tools be operational, but they also must be economically acceptable.

A library is organized physically for the handling and identification of publications and their contents. Although some tools might serve both functions, they may be grouped in one of the two broad categories according to their present capacities either for efficient handling or effective identification of publications.

PUBLICATION HANDLING

Publication-handling tools are those aids to the storage, as well as the reproduction, and transportation of the physical publication, such parts as pages, articles, and chapters. This review is intended to highlight the basic characteristics of these tools and suggest the role that each type might play in the Regional Center of the mid 1970's.

STORAGE

At present, the significant modes of storage are the micro-image replica and the original volume. Electronic storage, such as the use of computer-controlled magnetic tapes for the storage of whole publications, is too expensive for our consideration.

The tools for bulk storage of original volume are of two types. The first, compact storage stacks, reduce the amount of dead-air space to a minimum and make access to material relatively easy. Statistical studies enable us to predict the amount of space to be gained, the amount of money to be saved, and the improvements of service which will result from the introduction of these compact storage stacks. An accurate prediction of the effect of these stacks on the Center can be made by

modifying existing studies to fit our own specifications.

The second method of bulk storage is to acquire a separate physical facility away from the existing Library, preferably in a low rent area, but close enough to the Library for relatively quick service. Gathering data to make decisions concerning the use of this type of storage is not nearly so easy because many factors are determined by local conditions. As far as low cost storage and service from these facilities are concerned, practically no new tools are available to assist with the physical handling of materials. We are limited by the inherent characteristics of traditional stacks, book trucks, book boxes, etc. We have made very little progress in our efforts to reduce the manpower and the time delays necessary to service these collections.

The alternate method of storage is to convert material to some form of micro-image. Much has been done to make this form of storage inexpensive to prepare and service. Devices are being developed to make service on both roll film and film cards (e.g. microfiche) easy. At the present time, it seems that microcards (black on white micro-images) have a brief future. With the use of present tools for handling the film and quickly locating pages, it appears that service is nearly as fast with film as it is with present stack service in all but the smallest libraries.

The problem with micro-imagery is its physiological and psychological effects on patrons. Critics claim that reading blown-up copies on the standard reader is fatiguing to the patron. He tends to resist undesirable adjustments in his reading habits. The micro-imagery field may have reached a plateau in the development of tools that are acceptable to patrons. If researchers can progress farther, micro-image storage may have a significant impact on material storage for both current and old items.

A possible storage medium worthy of note is the magnetic tape edition of books being used by publishers to control printing machines. The completely formatted text (that is, the text and the instructions needed to organize the text on a page) is stored

on magnetic tape, which a computer uses to control a photo-composing machine. If and when these tapes are made available to libraries and information centers, we may be able to use them as a storage medium. The state of development in this storage tool, however, is still too primitive to be considered by the Center at this time.

Physical retention is only half of the problem. Whatever is done to store materials (particularly if this storage means physically separating the collection) will require extensive record-keeping and the development of efficient tools for identifying library materials and their locations. All the advantages of storage can be lost if the library must maintain manual records. In all probability, the development and use of efficient identification tools is the key to an effectice storage system, to be considered later in more detail.

REPRODUCTION

This selection is limited to those devices which reproduce the whole text or selected portions of it, grouped into three categories: permanently recorded reproductions, non-permanent types, and optical scanning types.

The library profession is well aware of the uses of permanent types of reproduction such as Xerox and Photostat. From the library point of view, these machines offer either dependable and inexpensive copies with poor print quality or high print quality at a high price and slow service time. At the moment it seems that the manufacturers have reached a plateau of produce quality. Research and development seem to be directed toward faster copies that can be transmitted electronically, rather than the development of higher quality copies faster and at lower cost. The Center can be expected to make heavy use of the existing devices for on-the-spot reproduction work. There is little doubt that both types of machines (e.g. Xerox, Photostat) will be needed to meet broad patron demands. Perhaps the extension of copiers depends upon our ability to organize the library around effective use, rather than appending copiers to existing operations.

Extensive effort now goes into the development of efficient optical scanners. These devices optically

scan a page and convert printed symbols to electronic impulses. At present, they cannot effectively scan the fonts found in books, on library catalog cards, etc. Even if they could, it seems doubtful that they ever will be able to compete with Xerox for on-the-spot reproduction. Their efficiency as remote reproduction devices cannot be predicted at this time. The main research and development effort in this area is not aimed at developing competition with reproduction devices, but rather at developing a tool to convert efficiently large masses of data into machine readable form for computer manipulation.

The TV camera and receiver exemplify non-permanent types of reproduction. This type of device quickly places any item from an entire collection in the patron's office or study. A simple method would be to place a printed copy of a publication in front of a TV camera for the patron's remote viewing. The ultimate scheme would be to have the entire text stored electronically in a billion word storage device. The computer and television would bring the information to the patron, who would select and control a publication completely without a librarian's intervention.

At the present time, the technical and economic feasibility of this last concept gives it very little chance of being realized in the library at our level within the next few years. It should be noted, however, that national groups such as EDUCOM are looking seriously into its development. We may be able to use this scheme later as a by-product of their effort.

However, the use of a local TV network among member libraries and business offices, using people to place the book in front of a camera, is quite feasible though its practicality might be challenged. The use of this tool would go a long way in satisfying the engineer's demands to reduce time for dependable information gathering to a minimum, granting the question of cost versus patron's use. Will patrons demand and use a TV scanning system or any other exotic information handling tool? Their reaction to microfilm has been less than encouraging. Even if the demand is established, we do not know to what extent the institutions will be willing to absorb the increased cost of this type of service.

It is my belief at the moment that the development of a TV/library system should be considered as an educational responsibility, with the library acting as an active prime mover and supporter. That is to say, we should actively support, aid, and encourage (perhaps even prod) the educator to use the TV to bring the library and recorded information closer to the classroom. At the same time, we should recognize that the classroom is his domain, not ours.

Video tapes more or less combine publication storage with permanent and non-permanent reproduction characteristics. Books stored on video tape can be reproduced permanently, either locally or remotely, and transmitted for remote TV viewing. This storage medium is too bulky now to compete with microforms. The service problems would approximate those of the book. Special applications may be found for video tapes in the library in the next few years; however, the limitations noted here are likely to hinder its use as a significant publication storage medium.

Photo transmission or the wire photo has been used by newspapers and the weather bureau for a long time. At the present time, its application in the library is limited. Transmission is slow, the quality poor, and the cost high. If these deficiencies were eliminated, it might become a useful tool for the transmission of whole pages and photographs.

TRANSPORTATION

The section above discussed some ways in which the whole content of publications might be reproduced and transferred from one place to another electronically. Each of these devices is expensive and complicated to use. From the library point of view they are still in the research stage.

It is discouraging to review the work going on to improve the physical transportation or movement of books. Time and motion studies have been made on the movement of books within a library and between libraries. Various devices for handling books have been evaluated. Yet, at the present time, there appears to be little prospect of any significant improvement over the stack boy and the messenger.

The limitation on the time taken to get the book to the patron once he has identified what he needs may prove to be the principal constraint in the amount of cooperation that can be developed among the member libraries. Our hope lies in the close proximity of the member libraries. Less than four miles separate the most distant of member libraries. The importance of good transportation between libraries and the lack of reliable data on the quality and cost of transportation suggest that studies in this area should be undertaken at a very early date.

COMMENTARY ON PUBLICATION HANDLING TOOLS

Despite our need to improve publication handling, it appears that the Center will not do any thing novel or significant for the handling of publications within the library or to deliver publications more speedily to the patron. However, nothing inherent in the material-handling problem will preclude the Center from introducing new tools as they are developed or become effective. The only area where caution is to be observed is in the use of micro-image forms. An extensive conversion program from paper to film might prove to be a costly error. Other tools can be introduced on an experimental basis and be implemented as the experiments dictate. Retracting a microfilm error is very difficult if the originals have been discarded.

IDENTIFICATION TOOLS

The size of collections and the demands of patrons have grown to the point where users of libraries suffer from the lack of adequate tools for the identification of publications and of their contents. This problem extends from searching the card catalog, to circulation, and binding. We are limited in the amount of identification that can be given. Ambiguities and errors also tend to reduce the dependability of identification tools in the eyes of the patron. Library records (e.g. catalog cards, circulation records, and order slips) are slow and expensive to manipulate. It is even harder to manipulate the data fields (author, title, dealer, etc.) on these cards. It is my intention in this section to look at the tools that might be useful in improving the handling of identification records within the library.

The identification of library materials and their contents is the pivotal part in every internal, dynamic operation of the library from the initial receipt of the publisher's announcement, through technical processes and reader's service, to the final withdrawal process. The complexity of the identification process, the large volume of data and number of processes involved, and the significance of the problem have caused the library profession to focus attention in recent years on tools to relieve this burden. The probable usefulness of the digital computer as an identification tool has interested librarians.

Identification media can be discussed in terms of their relationship to the patron and in terms of library technical processing needs. The patron uses indexes, catalogs, abstracts, bibliographic citations, etc., as vehicles that will lead him to the publication desired. Occasionally, these sources also answer his questions. The library, on the other hand, uses these tools, especially the bibliographic record, as devices for the selection and control of material within the collection. The same elements of data (e.g. author, title, date) are frequently used by both groups, but not for the same reasons. For the sake of brevity, the term bibliographic record will be used in place of the more specific terms such as citations, abstracts, catalog entries, circulation information, and order information.

STORAGE AND MANIPULATION

The tools for storing bibliographic data have traditionally been the card file (e.g. card catalog) and listings in book form (e.g. periodical index services and book catalogs). Technical processes within the library tend to use the book list. Card files are dynamic in the sense that they are continuously undergoing change as items are added, deleted, or altered. They are static in the sense that they are usually to be found physically in only one place. The book catalog, on the other hand, can be distributed. Updating of the book is hard, if not impossible, if it has been widely distributed.

Both of these tools are severely limited by the clerical labor involved, by the feasibility of multiple entries, and complex filing rules. The card file and book listings have another characteristic that

may not be considered a limitation according to your view. There is a tendency to develop multiple files for various operations. For example, the Reader's Guide lists journal articles only, leaving monograph listings to the Cumulative Book Index. Libraries also tend to have acquisitions want-lists, authority files, central serials files, circulation files, and the card catalog as separate tools. The integration of one or more of theses files is not common.

In recent years, there has been an attempt to reduce these defects and limitations by introducing machine-readable records and computers. Machine-readable records, such as Hollerith cards and edge-notched cards, are an attempt to reduce clerical labor and combine files. In most cases, the advantages of these tools have not been proved. At times the economic or service improvements were marginal. At other times, an old disadvantage was replaced by a new one.

Yet, punched cards have some advantages worth noting. A single machine-readable record can be used repeatedly to produce various outputs on demand. Mechanical devices, for example, can be used to do many of the common clerical operations. The data-manipulation characteristics of machines permit the automatic accumulation of management data (statistics) previously ignored because of the labor required to accumulate them.

Perhaps the single most important defect of punched cards, is the amount of data that can be stored efficiently. This limitation tends to cause the designer merely to automate an existing operation, rather than to design around fundamental principles and basic goals. I know of no case where a punched card system crossed over traditional library-organization boundaries and caused the reorganization or integration of acquisitions, cataloging, circulation, and binding into a single system.

The digital computer did not make a significant impact on the library problem until the introduction of the present new third generation design. The machines that predate the IBM 360, UNIVAC 1108, and the RCA Spectrum 70 did not have the storage capacity or the peripheral equipment needed to do library jobs effectively. Not only do these new machines have

adequate storage for library purposes, but they also have remote control devices that will, in effect, make the computer continuously available to the user from remote locations. Even more significant than the remote terminal feature is the fact that larger data storage will permit the library to design a single bibliographic record that can be used from the initial request through technical processes and the readers' services to the final withdrawal decision.

We can widen the bibliographic services provided to patrons by giving them more information than is on the traditional card catalog. We can move this bibliographic record into the user's office, if that office contains proper equipment. Filing rules cease to have meaning because the user asks a query of the computer rather than performing a manual search of the file. Filing rules for a computer-controlled file are based on computer efficiency and patron use patterns. Alphabetic characteristics, the organization of knowledge, and the mnemonic aids now used for determining file organization have no meaning. Multiple entries are no longer needed since the computer can search any combination of characters within a single record. For example, each book has a single record with separate fields on the record set aside for author, title, cost, borrower's identification, etc. The computer will select those fields of data required for each query and in addition can locate material even from incomplete citations (e.g. the root of a word in the title).

The computer offers great potential for the control of the bibliographic record. The computer, through this bibliographic control, can affect the organizational structure of the library. Unifying the files can unify the functions of the library (e.g. acquisitions, cataloging, circulation, and reference). The ability of the computer to absorb many of the clerical operations associated with these functions encourages a radical change in organizational structure.

These potentials are obviously not free and easy to realize. A computerized system should be designed as a single unit--that is, the ultimate design should be conceived and all the interactions between parts taken into consideration at the time the design is formulated. Implementation might be done piece by piece, but these pieces must eventually fit into a

predetermined overall pattern. An alternate design approach frequently is used today. This is to automate an existing operation, then design succeeding operations as you go along. This often results in the superimposition of a computer onto a traditional, manual library structure. This alternate approach assumes that the traditional organization and management structure within the library are correct. The availability of techniques such as systems analysis, and powerful tools, such as the computer, makes this assumption invalid. A great deal of preliminary fact-gathering is necessary before computer programming can begin. The latest generation of computers is new. Qualified programmers are few and lack extensive experience. We can predict success from the results we have seen with other systems, but we cannot guarantee it. No one has a sure route to follow to reach success.

Finally, the computers and their maintenance are expensive. It is doubtful that any one member of the Center could support a computer large enough to do all the jobs required within a single library, and even so, the nature of the library's use of a computer is such that a machine dedicated solely to library problems would be idle a great part of the time. Libraries store much with as few operations as possible - the opposite of scientific use of the computer.

BIBLIOGRAPHIC RECORD REPRODUCTION

The library has found tools for the reproduction of books and pages useful as well for the reproduction of all or parts of its bibliographic record. The patron wants to compile bibliographies form indexes and the card catalog. The same bibliographic data (or fields) in a record are used over and over again by many people for many reasons. This repeated need for the same data suggests that the system must be able to provide access to the same data repeatedly, and tools must be available so that this data can be efficiently reproduced, for instance by teletype. It has the ability of remotely reproducing data from many locations as the transmitter is impulsed locally. It can produce a permanent storage record automatically. It is accurate, dependable, and inexpensive.

The telephone is also a reproducer of bibliographic information, but it cannot retain this information. For this reason, its accuracy level is low when used as a library tool.

The digital computer is useful as a central control device for assembling data for reproduction. It can quickly select data and arrange it in any designed format. It also operates on the principle of "action by exception"--that is, there is no reproduction of data within the file except when a demand is placed on file. This fulfills the functions of circulation lists and book catalogs.

As a production device for answering queries and the production of tailor-made bibliographies for the patron, the computer is efficient and a satisfactory reproduction tool. However, reproduction devices attached to the computer (i.e. printers, card punchers, and remote terminals) operate on the principle of character by character reproduction. For this reason, this method of reproduction tends to be very expensive when multiple copies are needed, so that less expensive devices are required to extend the computers capacities.

COMMENTARY ON PUBLICATION IDENTIFICATION TOOLS

I believe that many of the publication handling and publication identification tools described in this Chapter can be used as partial solutions to the two basic problems presented at the beginning of this paper; namely, the need for better service to patrons and the improvement of library efficiency. These tools play only a partial role, however. Library procedures, organization, and management are perhaps even more important. An efficient tool that no one uses (or uses poorly) has scant value. The use of overall systems design techniques in the development of the Center in the mid 1970's is not a topic for consideration in this paper. I wish only to observe at this point that the tools fit into the overall system; not the converse where the system is designed around the tools.

It is rather obvious that I see the computer as the most powerful bibliographic control device available within the next few years. At the same time,

I see a very limited future for it as a tool for the storing and handling of whole publications between now and the middle 1970's.

The computer gives us the chance to break through fixed patterns of library design if we avoid the temptation of attacking existing individual problems on an ad hoc basis granting control of the bibliographic record as a key not only to publication identification but also to the publications themselves. Not only will it affect basic library design in the long run, but it will simplify specific processes such as material storage, circulation, and the like. This strongly suggests the centralization of all bibliographic records of member libraries into a common file that can be controlled, queried, and altered remotely from each institution.

CHAPTER III -- THE CENTER IN THE MID 1970's

An analysis of the problems outlined by member librarians (Appendix II), the geographic proximity of the members, and the characteristics of the tools available, suggest a basic structure of the Center. Some kind of common storage or stack facility is indicated. Centralized technical processing also is indicated. These two suggest that some sort of readers' services should be provided. The problems associated with record handling and control also imply the development of a centralized data processing facility. All of these factors would have an indirect effect on the relationship of the library to the patron. A direct assault on this problem is needed. The integration of all of these areas (though not necessarily a physical integration) almost inevitably would result in a unique management structure. Let us look at the overall profile as it might appear in a few years.

PATRON RELATED ACTIVITIES

Let us begin by a discussion of a library to house and service the collection of publications.

At the present time, we really have only two efficient publication formats, the paper original and the microform. During the next decade, we can expect an increase in the use of microforms. It seems very unlikely that the mass conversion of present books to microform will be undertaken because of the high ratio of conversion costs to expected use and space saving. The printed book as we know will continue to be predominate.

There is a very large probability, however, that microforms will be purchased in lieu of binding for many journals. Once the library has developed adequate tools for the evaluation of users' habits, we can specify the journals to be converted and the number of years to retain the original for browsing purposes.

More important than the journal, is the matter of storage of little-used materials whether they be monographs, journals, reports, or other forms. The Center requires a stack facility large enough to handle:

1. the permanent storage of little-used items;
2. temporary storage of selected items; and,
3. a core collection of items for which it has been agreed that only one copy is needed in the region.

If we developed such a facility, with these limited objectives, we would have only a safety valve. The members would continue to collect materials as they do now. There would be little incentive to develop a regional selection program which could equally satisfy particular objectives. From time to time material would be sent to this storage center to relieve local pressures. Although the members would gain temporary relief from storage pressures, such a facility would inconvenience patrons and cause excessive handling of both publications and records for everyone concerned. The storage of little-used materials alone is a poor base from which to design the Center's stack facility and service, but by beginning from a different base we can relieve overcrowding and, accomplish much more at the same time.

The previous chapter indicated that we can greatly increase our ability to handle bibliographic records through the use of a computer with remote terminals. Copying devices also improve our capacity to place library materials within the patron's working environment. These two tools enable us to think in terms of the creation of a "special studies" library. This would be a library designed especially for those people doing independent work based on little-used or uncommon publications. It would contain second-level material that need not be available for immediate access but would be made available within a short time (minutes or less than half a day). The public library is included because it has a select group of users who need highly specialized materials. More students and scholars than ever before rely on the library for access to this kind of information.

The book selection policy for such a collection would be based upon the development of a common regional collection with both depth and breadth, with one copy of each publication expected to have wide regional value and not found in a member's collection. It would avoid areas of rather narrow or restricted

interest such as law and medicine. Hopefully, such a collection would strengthen the overall coverage of literature so that scholars, regardless of their institution or company affiliation, could recognize this collection as a resource for material of limited use.

Such a collection would have a direct effect on the two basic problems stated at the beginning of this paper. Together with his local library, the patron could have a comprehensive collection to which he could turn with confidence. The "special studies" library would also serve as a focal point to which he could turn for assistance when looking for materials beyond his local library. Present duplication of acquisitions, processing, and service among members would be reduced.

The effect on the member libraries can be easily seen. At the present time, members acquire large amounts of material especially for the peculiar interests of certain individuals, such as faculty members and graduate students. All the member libraries frequently select an item "so that it will be available in case it is requested." My suggestion is that these two selection criteria serve as the basis of a special studies collection.

The effect on the existing libraries would go beyond central pooling. Their individual collections would grow more slowly than is now the case, and the libraries could be organized more directly around the needs of the current activities of the community they serve. They could be more dynamic and adjust more rapidly to the continuing changes within their communities. This adjustment would include the permanent or semi-permanent transfer of material to individual libraries from the Center as the special needs suggested in the preceding paragraph are identified.

At the same time, the special studies library would carry with it the responsibility of providing exceptional study, reference, communication, and transportation facilities. The TV network referred to earlier may be essential, so that the patron could have remote, quick access to publications when the occasion demands. Messenger service measured in terms of hours and minutes, not days, may be required. Study facilities comparable to the patron's office are

necessary if we are to provide services to equal those on his own campus. Very competent readers' service librarians would be required. Finally, there must be rapid, complete, flexible bibliographic control, so that all member libraries could be made continuously aware of the ever changing status of the collection. It must also be possible to move whole segments of the collection to member libraries as special needs are created. The central bibliographic record referred to earlier would provide the means by which each library, and each patron, would look upon the central collection as a branch of the main library at hand.

Actually, this last phrase sums up the concept rather well. By the use of good management, transportation, communication, and bibliographic control, each library would look upon this central collection as another special collection within his own system.

With the aid of good management data system, the amount of conflict over control of material and services between libraries can be reduced to an arbitrarily low level. Through statistical evaluation methods we would be able to predict those areas where two or more groups will make, simultaneously, the same demands on the collection. Once these are predicted we can compensate for most of them. This proposed central library and service center will also be able to accept outside service now being handled independently by member libraries. It could handle all inter-library loans and most reference queries from outside the member libraries.

If the member institutions are to take advantage of the computer controlled indexes, such as Chemical Abstracts, Engineering Index, and MARC, a pooling of services such as the one proposed seems mandatory. It is doubtful that even the largest libraries can afford their own facilities for processing and servicing these tapes. These machine readable bibliographic services can be directly controlled from terminals in member libraries though the files and the computer are centrally located.

Having made an argument for a central physical plant, we should note that in actual practice we may find a division of responsibilities among members preferable to centralization in many cases. For example,

one of the member libraries might accept inter-library loan responsibility for the Center. Existing special collections, such as Duquesne's African Collection, would remain in their present locations, but would be maintained and serviced by Duquesne as a regional resource.

PATRON-LIBRARY RELATIONSHIP

This discussion of patron-related activities has concentrated on a "special studies" library and "service" to the patron. A static service must be replaced by active integration of the library into the whole information spectrum of the community which sustains it. Ways must be found to bring library, lecture, and laboratory into one unified system. Dr. Havighurst foretells this organization when he says that the educator considers the "...human mind as an instrument of learning rather than a storehouse of knowledge... This means that they (students) must learn to use libraries, laboratories, and their communities as sources of information."* Other persons both within and without the library profession have made similar statements in recent years concerning the library's future role in society.

A program to develop this type of patron-related organization is vital to the future of the Center and to librarianship. The proposal outlined in this paper does not suggest participation in such a program by the Center because it must be worked out between the member libraries and the communities to which they are attached. However, such a program does not exclude the Center. Each library must provide its community with services that can effectively supplement with the lecture and the laboratory as information sources. The Center helps each library to become an effective tool of coordination, by serving as a technical advisor on projects which integrate the community's information sources.

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* Dr. Robert Havighurst, "Educational Changes; their implication for libraries." ALA Bulletin, v. 61, #5, May 1967, pp. 537-43.

TECHNICAL PROCESSES

The previous sections suggested changes which would alleviate some of the patron's problems and affect his use of the library. At the same time, the Center would be able to make significant improvements in a library's internal activities.

The members suggested a common, technical processing facility. We all acquire and process materials in basically the same fashion. By combining these facilities, the members can operate more efficiently and effectively; with dealer, publishers, LC Card Division, and binders.

Although a common, technical processing facility seems essential by the middle 1970's, this facility could come about by an amalgamation of existing departments. Before such mergers can be made, however, the machine-controlled bibliographic record must be available. A common file of bibliographic records, from initial request to withdrawal of each item in the system, must be organized for remote queries. Without this file, delays in acquiring and processing centrally with extensive manual record keeping would most likely cause the whole system to collapse.

The question of common or compatible classification systems is malapropos. Each member institution would retain its present system. Catalogers, although working in a central location, would follow the rules for the library where the book is to be located. On these rare occasions when the patron uses the classification number as a way to bring books on a subject together, he would vary his methods according to the library in which he finds himself.

The one area where agreement seems essential is in the selection of subject headings. Failure to agree on this point will surely be viewed by the patron as the imposition of intolerable ambiguity. He would expect standardization of terms as part of standardization and unity of effort. His use of synonymous terms need not weaken a unified system, provided he has access to his subject matter wherever he enters the system.

Standardization of subject headings is only one desirable feature of common technical processing facility. It would encourage other standards, so that both patron and librarians would feel as though they were using one library system rather then eight.

The member libraries will control both the "special studies" library and the technical processing facility. The policies and operating procedures of the "special studies" library can be developed in such a way that it will appear and operate as a special branch to each member library, not as a super library over the whole organization. On the other hand, control of the technical processing facility must be maintained centrally. This control would be evident in the standardization of operating procedures, budget control, use of forms, etc.

Neither of these concepts is new. Today large library systems with branches and central processing facilities operate in a similar way. The branches have considerable latitude to adjust to the patron's needs. Internally, the technical processing facility with these branches works under a tight central control of the operation.

CENTRAL BIBLIOGRAPHIC CONTROL AND THE COMPUTER

The control of the bibliographic record has been referred to repeatedly. Although it might be discussed under either technical processes or readers' services, its significance in the whole structure of the Center in the mid 1970's is such as to require additional comments.

The file itself would exist in a central computer-controlled, direct-access device. It would be controlled remotely from terminals by the staff of the member libraries. The automated Union List of Periodicals will serve to demonstrate such a system.

The patron's use of this file would be much simpler than is now possible with a card catalog. First of all, the patron need not be concerned with the problem of consulting multiple files. All the present bibliographic files (order, card catalog, circulation, etc.) from all member libraries would be available from the remote terminals. Second, and perhaps more important from the patron's point of view, he no longer need be concerned about filing rules. He would supply the computer with the same kinds of information that he now has available when he approaches the present manual files. The computer then searches the file in its own way. The machine supplies the patron with the information that matches the patron's stated criteria.

File maintenance is accomplished in a computer-controlled file by instruction. The computer is told to add, delete, or change whole entries or specified parts of entries, one by one on individual records as appropriate. A single instruction can be used to change any or all records in a file. For example, all the subject heading entries entitled "data processing" could be changed to "automation" by giving the computer one instruction via any terminal in the system. Of course, maintenance instructions would contain a security key so that only the appropriate personnel could make alterations to the file. Additional information on the design of a record is given in Appendix I.

The computer would be used as the interface between the regional members and other networks such as other regional installations and EDUCOM. A tie between any terminal in the system and any other network is technically feasible using the computers in each network as the switching and communications media. The need for such an elaborate system is questioned at this time. A single tie between regional headquarters seems adequate; even this link need not be computer-controlled.

The proposed system is basically a library. Information retrieval has not been considered an integral part of the overall design. However, indexes such as Chemical Abstracts are rapidly becoming available on magnetic tapes. NASA and DDC document abstracts are now available. A 5% sample of the 1960 Census is available. The Center must be able to service these "publications" as it would if the information were in book form and begin exploiting these tapes by providing information that could not have been made readily available in book form. Computer programs for making simple searches of these tapes are available, either from their publishers or easily written. During the development of the other phases of this program, there appears to be no reason for the Center to exploit the tapes beyond the minimum for effective use.

A tool with so much power, significance, and influence as the computer would certainly be given special consideration in the proposed Center. Yet in all probability, the Center will not need to own a Computer. Despite the large number of users and frequent query

demands, the daily load on a large computer, such as the IBM 360 Mod 67 or the UNIVAC 1108 now being installed at Carnegie-Mellon University, is such that all the library queries put together would probably amount to only a few minutes of computer time each day.

The Center would have its own staff of programmers and analysts, but no computer. This engineering service-oriented staff within the Center would provide central service and advice to the members on other types of equipment, such as communication and copying devices and would be able to serve as consultants to the members with local systems analysis and design problems.

MANAGEMENT OF THE ORGANIZATION

The previous sections have suggested the way the Center should look in the middle 1970's from the point of view of the patron and the librarian. Such an organization would also affect the management structure of the Center and the member libraries. As changes take place, the management structure would evolve into one that fits the needs of each institution. Rather than an attempt to predict how these structures would appear, it is enough to list some of the responsibilities of the two groups (Center and members) and leave the structure to the imagination of the reader.

A. Member libraries' responsibilities
   1. Local reference
   2. Collection selection policy
      a. Local needs
      b. Regional needs
   3. Patron's education and related programs
   4. Local circulation input
   5. Bibliographic record control requiring local variations
      a. Circulation
      b. Limited file maintenance
   6. Local stack control
   7. Local management data gathering and evaluation
   8. Profession liaison and an advisory role with the central technical processing facility

9. Advisory council member on the Center's executive board
10. Summary
    a. Concentrate on professional services for readers
    b. Release as many clerical and technical duties as possible to the Center
    c. Release technical processes to the Center
    d. Help build and control a central "special studies" library

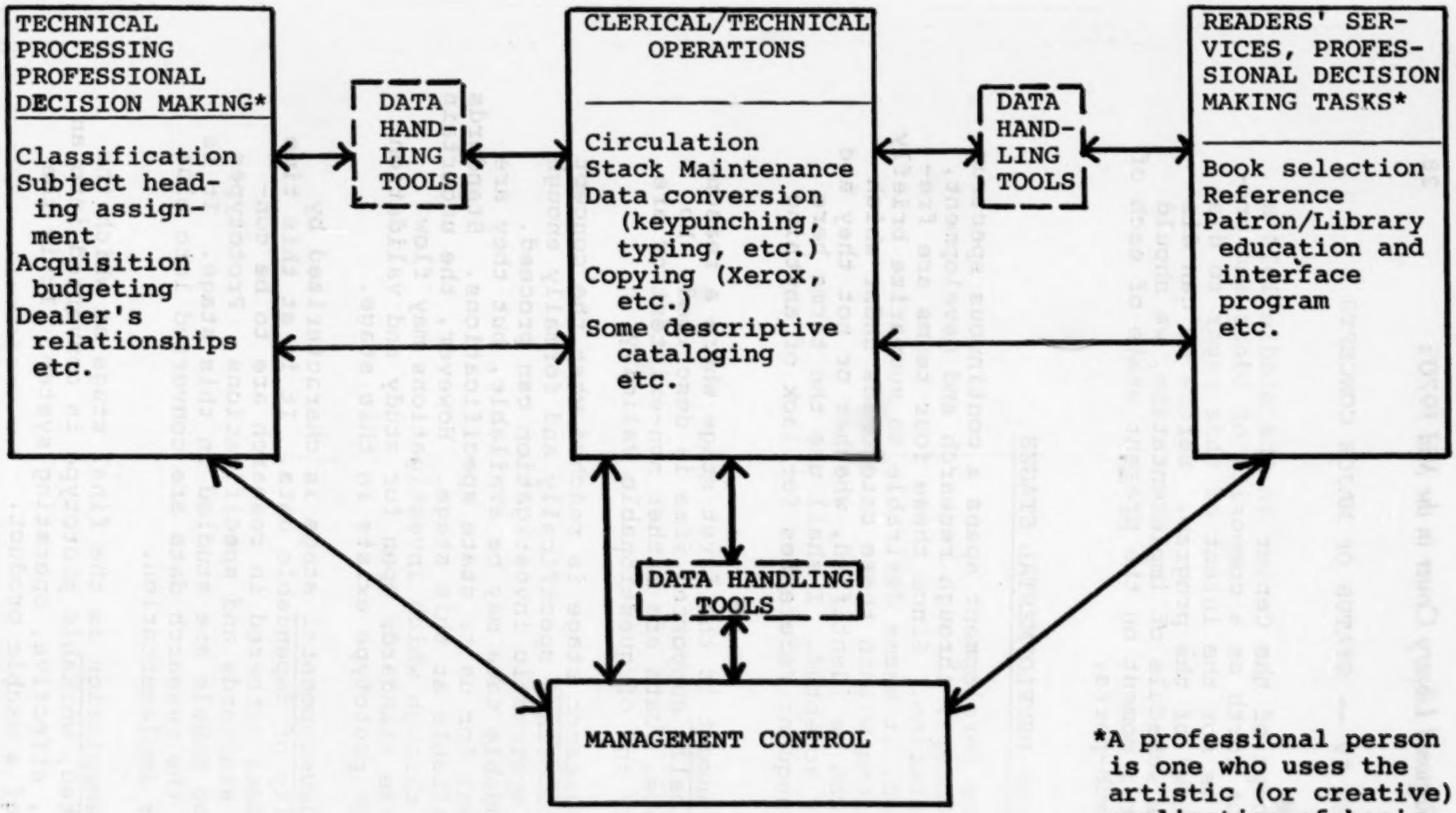
B. Center's responsibility
1. Maintain a "special studies" library
2. Maintain a central technical processing facility
3. Design and operate tools of common use (computer, TV, etc.)
4. Operate a messenger and delivery service
5. Educate librarians in the operation of
    a. Special tools (computer, etc.)
    b. Regional systems
6. Advise members on new technical developments
7. Operate a management data center for all members
8. Operate inter-library and intra-library loan systems for members
9. Maintain an information clearinghouse for scholars (locate special talent and information resources)
10. Design, implement, and evaluate systems of common interest
11. Chair the standards committee of member libraries
12. Chair the material selection committee of member libraries
13. Liaison and interconnections with national and other regional systems
14. Summary
    a. Service facility to member libraries
    b. Technical processing for the system
    c. Minimal readers' service except to operate the "special studies" library

In all probability the present organizations around operations (acquisitions, cataloging, serials, circulation, reference, etc.) would evolve into one in which the professional decision-making activities within technical processes and readers' services are better defined and distinct from the clerical/technical

operations than is now the case. Procedures would be redefined because of the communications and information handling tools referred to in this paper, in both the Center and in member libraries.

The block diagram (Figure 1) lists some of the activities that fall into major categories. Since the Center is to have its own collection and the member institutions will have some clerical operations, it cannot be said that any block is the prerogative of either the Center or the member institutions. In practice, however, the Center would need clerical/technical personnel and the member libraries would be staffed with professional librarians and custodial personnel.

I should like to make one final note concerning the evolution and control of the overall Regional system. The Regional system would need a management system to gather statistical data concerning the operation of the Center and the member institutions, for evaluation in reports sent to appropiate managers and member libraries so that proper controls can be exercised continuously. This function should be carried out today in each of the member libraries from the smallest to the largest. As we combine activities, even if a fraction of the proposed program, permanent full-time management data staff will be required. One can summarize the activities of such a group by saying that from 90% to 95% of the statistical data gathering and manipulation can be done probably by machine, but, something less than 30% of the evaluation work can be automated.



*A professional person is one who uses the artistic (or creative) application of basic principles in the solution of problems.

FIGURE 1
LIBRARY AND CENTER OPERATIONAL ORGANIZATION

CHAPTER IV -- STATUS OF MAJOR CONCEPTS

A concept of the Center in the middle 1970's has been put forth as a composite of ideas and programs. It is not the intent of this paper to discuss the "how" of the program. Before we can discuss a time schedule of implementation, we should reflect for a moment on the present state of each of the major sub-parts.

DEFINITION OF DEVELOPMENTAL STAGES

Systems development spans a continuous spectrum from the concept, through research and development, to implementation. Since these four terms are frequently used, it seems desirable to summarize briefly the conditions within these categories under which a project can be identified, whether or not they are universally accepted. I shall use the terms here and in subsequent references for lack of anything better.

The concept is the first stage where a reasonable, logically supported idea is described. No model exists. Data are either non-existent or are fragmentary and of questionable validity.

The research stage is reached when the concept has been redefined specifically and formally enough so that a systematic investigation can proceed. Some dependable data may be available, but they are insufficient for us to state specifications. Standards may be available at this stage. However, the uncertain direction through which investigations may flow leaves these standards open for study and validation. No model or prototype exists in this stage.

The developmental stage is characterized by availability of dependable data. It is at this time that the data gathered in research are to be converted to standards and specifications. Prototypes and working models are studied in this stage. It is here that the research data are converted into blue prints for implementation.

Implementation is the final stage at which the demonstrated, workable prototype is converted into an efficient, effective, operating system. It is the creation of a usable product.

The first three stages imply states of continuous flux and change. Although this last stage of implementation results in a somewhat stable operating product, it should not be assumed that this product is static or unchanging. In fact, one of the most urgent needs of library design is to create systems that are dynamic and provide for change in a directed, controlled manner to adjust to the increase of knowledge and the needs of the library's community.

STATUS OF PROGRAMS

First, we must consider the status of the machine-controlled bibliographic record. Our long experience with bibliographic data in existing library situations has supplied us with enough data to advance the state of this area beyond research. Computer programs are presently being written and corrected so that adequate tools for the manipulation of the record will be available within months. Preliminary models of parts of this record (acquisitions, cataloging, circulation) have been tested, but no unit tests have been made. We still need a demonstration model. We have not written specifications for mass file conversion nor have we adequately defined how such a file will be used in an operating environment. Clearly, the single bibliographic record idea is in the developmental stage.

In the mid 1970's, the Center's members should be well on the way toward integrating recorded information into the whole information spectrum--that is, the library will be more closely integrated into the classroom and the laboratory and exist less as an external service. This is beginning to happen in the elementary and high schools. The success of such projects seems essential, not only for the Center's effective operation, but also for the survival of the library as an information medium. Concepts related to this integration have been discussed at varying levels through the years, as one of the vaguely stated, or implied, goals of librarianship. More recently, the "Library College" group has tried to define this more specifically. Perhaps the most articulate recent work can be found in the Proceedings of the Lehigh Conference on Information and Engineering Education. Some dependable data are available from Miss Knapp's experiments at Monteith College and in

other projects. On the whole, I should say that this program has advanced slightly into the research stage, but more data and experimentation are needed before prototypes can be studied and specifications written.

Models of common, technical process facilities exist within our own members (e.g. Carnegie Library of Pittsburgh, University of Pittsburgh). Yet, as with so many other activities within the library organization, insufficient data are available for one to write adequate specifications. As of now no group has actually gone through the mass conversion and job reorganization that this project will require, and one can say only that we will need a prototype study before implementation can be undertaken seriously. Considering these constraints, it appears safe to say that this project is at the developmental stage.

The separate independent "special studies" library is in the conceptual stage. Acceptance by patrons cannot be predicted at this time. The Center's structure, to provide readers' services and technical processes efficiently, is speculative. The first step in the research stage will be to outline a program to study and gather data on this concept.

The application of many miscellaneous tools, such as page copiers, microfilm, and the telephone, are so far along that they can be considered to be at the implementation stage. In most cases, we have enough data and experience so that applications can be described and specifications made without additional data.

Television cannot be included in the above category. Although the characteristics of TV are well-known, its role as a tool for handling permanently recorded information has not been explored to any great extent. We have yet to progress to the place where we are able to create an adequate prototype and gather data for specification writing. We need at least preliminary research information on the influence of this device on both patrons and librarians. TV is probably in the middle or later research stages.

This writer predicts that the traditional library organization around operations will be superceded by an organization divided into: 1. management, 2. clerical/technical, 3. technical-processing professional, and

4. readers' service professional categories. It is much too early for research in this area because we do not have the basic tool (machine-readable bibliographic record) necessary for data gathering. Intuitively, one would think that such an organization must follow from the other projects. Yet, we cannot define the specific operations and the categories into which these operations will fall.

Management data sub-systems have been used so extensively in other disciplines, they are a separate area of study. The concept has been identified, yet little design data for libraries are available. The concept of using management data as a tool to liberate static library organization and convert it into a continuously changing, dynamic one, is particularly questionable. Hence, management data sub-systems must be considered to be at the beginning research level.

This briefly summarizes the status of the major programs leading to the implementation of a Pittsburgh Regional Library Center in the mid 1970's. As new tools are developed and we become involved in the systems analysis, drawing flow diagrams, in data gathering and design of experiments, the status of these projects may regress or advance. The next section will discuss briefly the nature of these tasks and present a time schedule for implementation.

CHAPTER V -- IMPLEMENTATION PROCEDURES

A concept of the library system has been proposed based upon logic with but little specific data available, on the assumption that the members consider the terms "cooperation" and "regional library development" to imply relinquishing some of their autonomy, tradition, facilities, personnel, routines, and funds so that modern library problems can be resolved with modern tools. It seems to me that the next step is to find out to what extent these concepts and a proposed implementation schedule are acceptable to the members of the Center. At this stage, acceptance need only be made in principle and in a spirit of cooperation because hard facts are lacking and specific projects have not yet been proposed.

PROCEDURES

After reaching a consensus of the members on the desired end-product, the job of analysis begins. We must first obtain a detailed description of present operations. This will involve interviewing and flow charting in considerable depth. Next, quantitative data must be gathered at selected points in the various operations so as to provide us with some evaluative tools.

The next step is to bring these analyzed or separated parts back together into a new, efficient system. New tools, procedures, standards, specifications, and ideas are added to the old parts, at the point between concept and implementation where the potential task is found. The manner and degree of combination are influenced by the quantitative data gathered in the analysis. The original conceptual design is used as the guide, but not the blue print, in the creation of the developing system. The very nature of research and development implies risk and uncertainty, without certainty of the final operating system when the project is in the conceptual stage. When the implementation stage reaches completion, the final operating system and how it will operate is clearly drawn.

SCHEDULE

Figure 2 shows a schedule. A schedule is made at this time based on my background in librarianship and my experience in systems analysis. Undoubtedly, the factors mentioned in the preceding section will force changes in the identification of unique projects, reorganization of the sequence, and alterations in the time needed for the completion of specific projects. The projects are not arranged in any order of priority.

CLOSING NOTE

It might be appropriate in closing to reaffirm that this paper is written under the assumption that personnel and money are available. Tools and technology, as noted in Chapter II, are available. The design does not exist because it must derive from systems analysis. This paper has sought to develop only the concept of a regional library center and what it can accomplish.

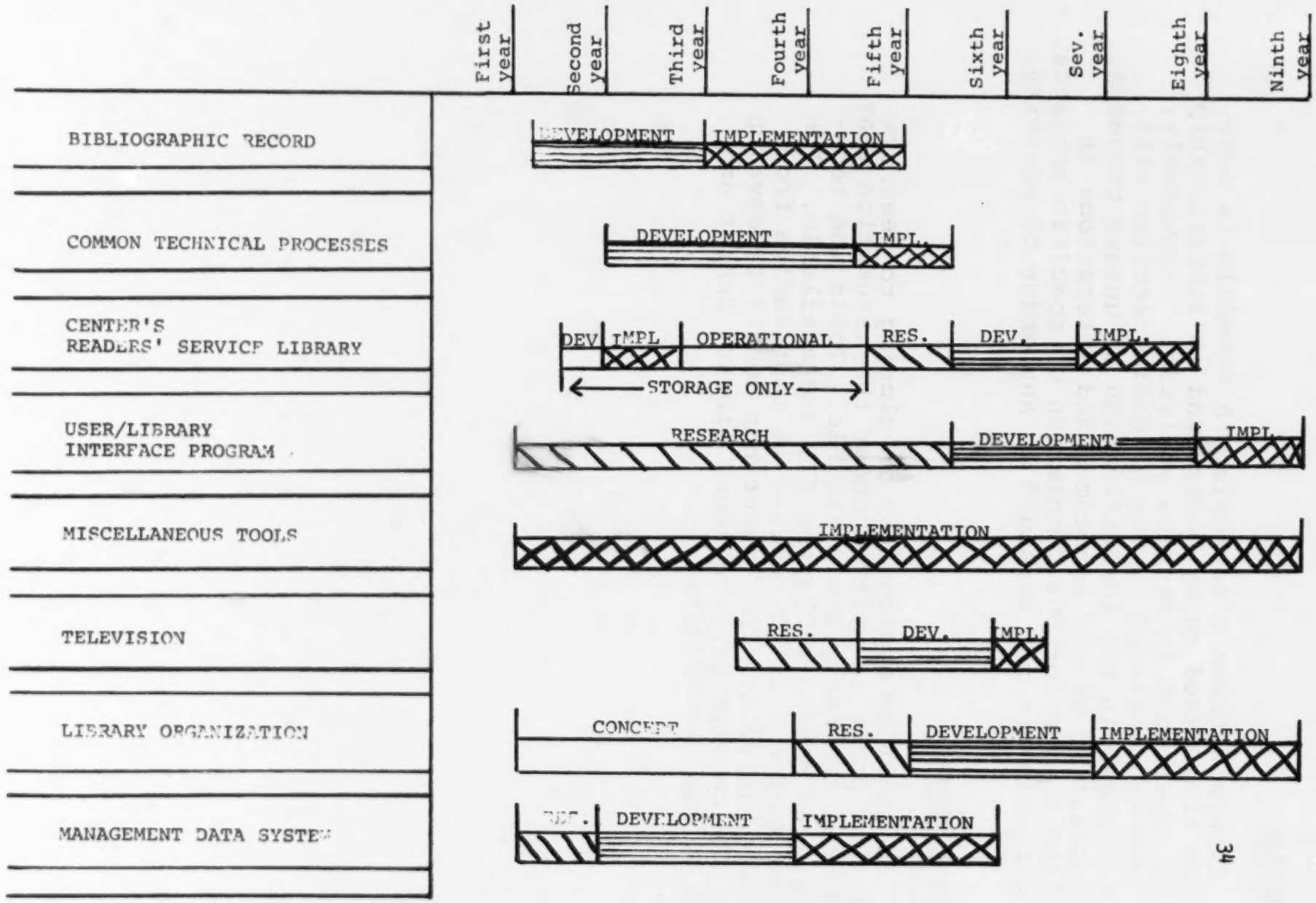


FIGURE 2 - SCHEDULE

APPENDIX I

THE COMPUTER CONTROLLED BIBLIOGRAPHIC FILE

The computer controlled bibliographic file is a single file or catalog of data used to describe publications for technical processes and reader's service purposes. Access to the file for query or update purposes can be made from multiple remote locations. Connection to the file is made through telephone lines or some similar electrical method. A second "archive" of rarely used data is maintained automatically. Delays will be encountered when access to this information is desired.

File organization is determined by machine search and update efficiency. Traditional methods of organizing the data (e.g. main entry) have no meaning since one asks for a response to a query rather than a means of conducting a search.

Records within the file are constructed in the following manner:

1. Each record (i.e. citation) has a unique identification called the control number.

2. Each field or bibliographic segment (i.e. author, title, publisher, date, etc.) is uniquely identified by a coded symbol, not its position in the citation.

3. Each citation is open-ended so that new fields can be added or deleted upon command.

4. Each field appears once and only once in each record.

The computer controlled bibliographic file is illustrated below. The bibliographic data for any particular publication will depend upon the place of that publication in the library's technical processing stream or reader's service. The specific fields of data to be supplied depends upon the status of the person making the query (e.g. a patron has no need of invoice or voucher numbers). Table (1) illustrates the changes in the record. Figure (3) graphically illustrates the tie between the file and the various input/output terminals.

OPERATION	FIELDS ADDED TO MASTER FILE	BIBLIOGRAPHIC DATA FOR:		FIELDS DELETED FROM MASTER FILE	ARCHIVES FILE
		PATRON ACCESS	LIBRARY STAFF ACCESS (Patron's bibliog. data plus the following)		
Add "MARC" tape		SBD(1)			
Request to add new publication	Requester's name. LCN[2], date[3], "In process" note. Searcher's information.	LCN, "in process" note.	Requester's name Searcher's information.		
Order publication	Order no., dealer, price, copies.	Update "in process" note	Order no., dealer, price, copies.		
Publication received	Invoice no., voucher no.	Update "in process" note.	Invoice no., voucher no.	Misc. acct. data.	LCN, invoice no., voucher no. amt., and other ordering information.
Cataloging complete	Catalog revisions	Complete catalog entry	Update "in process" note	Searcher's information.	Requester's name.

TABLE 1 BIBLIOGRAPHIC RECORD CHANGES

TABLE 1 BIBLIOGRAPHIC RECORD CHANGES (CONTINUED)

OPERATION	FIELDS ADDED TO MASTER FILE	BIBLIOGRAPHIC DATA FOR:		FIELDS DELETED FROM MASTER FILE	ARCHIVES FILE	
		PATRON ACCESS	LIBRARY STAFF ACCESS (Patron's bibliog. data plus the following			
Reader's service dept. action	Circulation status (reference, reserve, etc.)	Circulation status		"In process" note		
Circulation transaction	Borrower's I.D. date due	Borrower's I.D. date due	Use statistics	Lending information upon return of publication.		
Withdraw	Note of withdraw decision. Location in standard bibliography (eg. LC catalog)	Author, title, publication date, withdraw decision, location in standard bibliography.		All SBD fields except author, title, and date of publication.	Withdraw decision, location in standard bibliography, use statistics.	

NOTE: (1) SBD is Standard Bibliographical Data (authors, titles, publisher, place, date, classification, callation, notes, subjects). See figure (4) for MARC's list of SBD entries.

(2) LCN is local control number. This number uniquely identifies the publication locally and is used by the computer as the controlling element each time the record is updated.

(3) The date is assumed to be added whenever a change to the record is made.

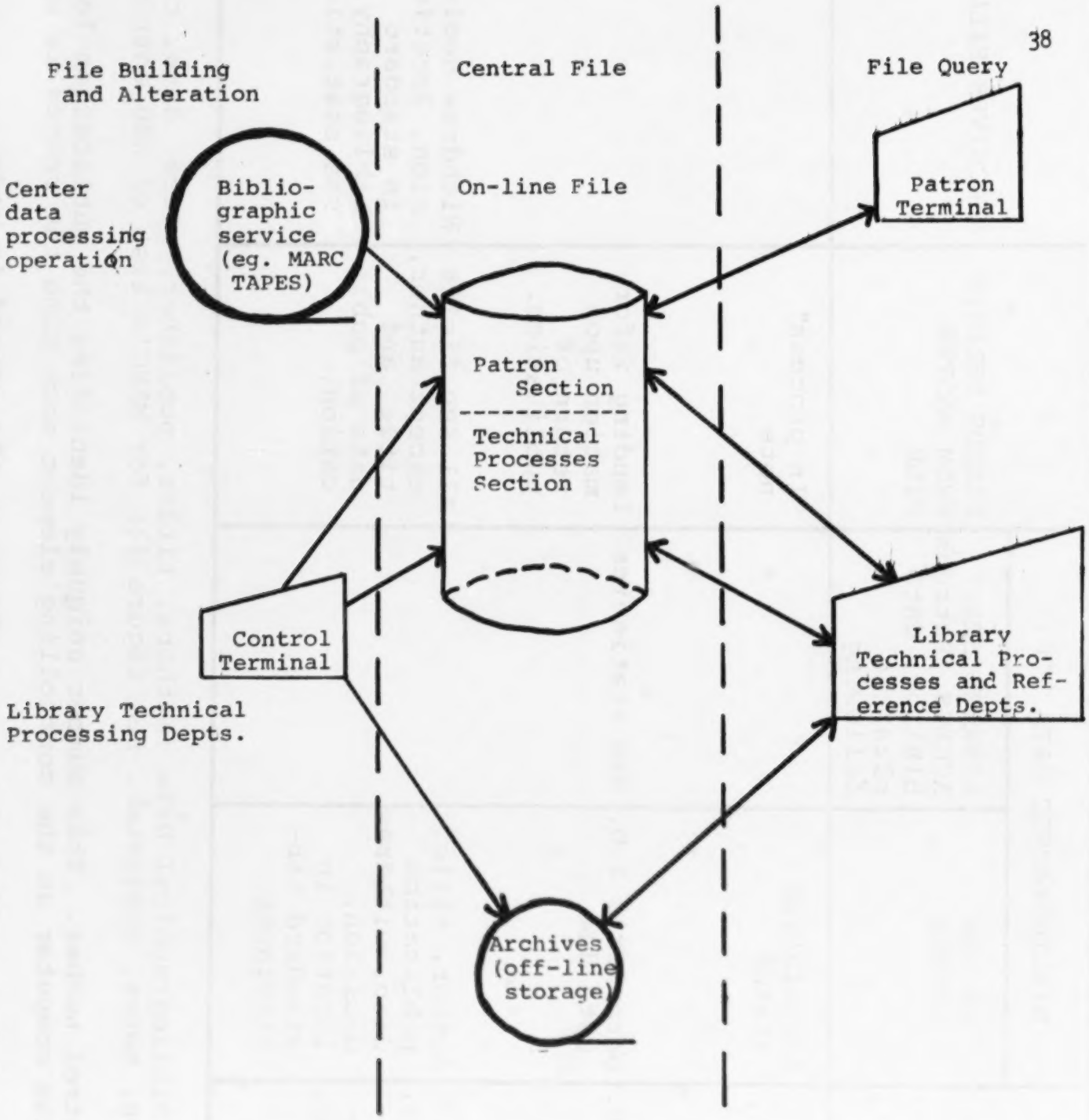


FIGURE 3

USER/BIBLIOGRAPHIC FILE COMMUNICATION SYSTEM

LIST OF MARC STANDARD BIBLIOGRAPHIC DATA ELEMENTS

CONTROL FIELDS
0 0 1 Control Number
0 0 2 Sub-Record Directory
0 0 3 Reserved
0 0 4 Cataloging Source
0 0 8 Fixed Fields
0 0 9 Languages

CONTROL NUMBERS
0 1 0 LC Card Number
0 1 1 Linking LC Card Number
0 1 5 National Bibliography Number
0 1 6 Linking NBN
0 2 0 Standard Book Number
0 2 1 Linking SBN
0 2 5 Overseas Acquisitions Number (PL480, LACAP, etc.)
0 2 6 Linking OAN Number
0 3 5 Local System Number
0 3 6 Linking Local Number
0 3 9 Search Code

KNOWLEDGE NUMBERS
0 5 0 LC Call Number
0 5 1 Copy Statement
0 6 0 NLM Call Number
0 7 0 NAL Call Number
0 7 1 NAL Subject Category Number
0 8 0 UDC Number
0 8 1 BNB Classification Number
0 8 2 Dewey Decimal Classification No.
0 9 0 Local Call Number

MAIN ENTRY
1 0 0 Personal Name
1 1 0 Corporate Name
1 1 1 Conference or Meeting
1 3 0 Uniform Title Heading

SUPPLIED TITLES
2 4 0 Uniform Title
2 4 1 Romanized Title
2 4 2 Translated Title
2 4 3 Uniform Title (Collective Works) (Reserved for British MARC)

TITLE PARAGRAPH
2 4 5 Title
2 5 0 Edition Statement
2 6 0 Imprint

COLLATION
3 0 0 Collation
3 5 0 Bibliographic Price
3 6 0 Converted Price

SERIES NOTES
4 0 0 Personal Name-Title (Traced Same)
4 1 0 Corporate Name-Title (Traced Same)
4 1 1 Conference-Title (Traced Same)
4 4 0 Title (Traced Same)
4 9 0 Series Untraced or Traced Differently)

BIBLIOGRAPHIC NOTES
5 0 0 General Notes
5 0 1 "Bound with" Note
5 0 2 Dissertation Note
5 0 3 Bibliographic History Note
5 0 4 Bibliography Note
5 0 5 Contents Note (Formatted)
5 0 6 "Limited use" Note
5 2 0 Abstract

SUBJECT ADDED ENTRY
6 0 0 Personal Name
6 1 0 Corporate Name (excluding political jurisdiction alone)
6 1 1 Conference or Meeting
6 3 0 Uniform Title Heading

LC SUBJECT HEADINGS
6 5 0 Topical
6 5 1 Geographic Names
6 5 2 Political Jurisdiction Alone or with Subject Subdivisions
6 5 3 Proper Names Not Capable of Authorship
6 5 4 Headings Modified for Children

OTHER SUBJECT HEADINGS
6 6 0 NLM Subject Headings (MESH)
6 7 0 NAL Subject Headings (Agricultural/Biological Vocabulary)
6 9 0 Local Subject Heading Systems

FIGURE 4

OTHER ADDED ENTRIES

7 0 0 Personal Name
7 1 0 Corporate Name
7 1 1 Conference or Meeting
7 3 0 Uniform Title Heading
7 4 0 Title Traced Differently
7 5 3 Proper Name Not Capable of Authorship

SERIES ADDED ENTRIES

8 0 0 Personal Name-Title
8 1 0 Corporate Name-Title
8 1 1 Conference or Meeting-Title
8 4 0 Title

9 0 0 BLOCK OF 100 NUMBERS FOR LOCAL USE

FIGURE 4 (continued)

APPENDIX II

Librarians from the major institutions in Pittsburgh had been meeting informally over a twenty year period. It became apparent in recent years that many common problems required the efforts of a more formal organization. This ultimately lead to the formation of the Pittsburgh Regional Library Center. As a step in this direction, representatives from the institutions forming the Center compiled a list of pressing needs. The report of this work is reproduced below.

Library Coop Group
Pressing Needs

Revised, April 22, 1966

As the pressing needs were reviewed and terminology clarified following discussions at the last meeting of the Coop Group, it is apparent that there is perhaps more consistency and communality among the various libraries than might first be thought. Some common categories have been consolidated, some eliminated as not suitable as Center undertakings, some transferred to "Internal Problems". The last has been omitted from this compilation.

1. Centralized technical processes including shared staff time.*
2. Storage of little-used material.**
3. Improved bibliographic access, reference centers, and faster I.L.L.
4. Cooperative collection building and special collections.
5. Local delivery.
6. Photo-reproduction and microfilming services.
7. Telefacsimile.

*Carnegie for community libraries in the district.

**Some do not have an immediate need, but will within five years.